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ARMY ELECTRONICS COMMAND WHITE SANDS MISSILE RANGE N--ETC F/G 4/2  
19303 GSRS. MISSILE NUMBER 1013, ROUND NUMBER V-13 (1 DECEMBER --ETC(U)  
MAR 79

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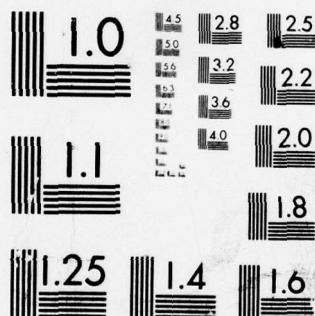
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March 1979

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METEOROLOGICAL DATA REPORT

19303 GSRS  
Missile No. 1013, Round No. V-13  
(1 December 1978)

By

WSMR Meteorological Team

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ATMOSPHERIC SCIENCES LABORATORY  
WHITE SANDS MISSILE RANGE, NEW MEXICO

**ECOM**

UNITED STATES ARMY ELECTRONICS COMMAND

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Meteorological data gathered for the launching of 19303 GSRS Missile Number 1013, Round Number V-13, are presented in tabular form.		



SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

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## INTRODUCTION

19303 GSRS, Missile Number 1013, Round Number V-13, were launched from LC-33, White Sands Missile Range (WSMR), New Mexico, at 1545 HRS MST, 1 December 78. The scheduled launch time was 1545 HRS MST.

## DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

### 1. Observations

#### a. Surface

(1) Standard surface observations to include pressure, temperature ( $^{\circ}\text{C}$ ), relative humidity, dew point ( $^{\circ}\text{C}$ ), density ( $\text{gm}/\text{m}^3$ ), wind direction, wind velocity and cloud cover were made at the LC-33 Met Site at T-0 mins.

(2) Anemometer data were provided from existing pole mounted and tower mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

#### b. Upper Air

(1) Low level wind data were obtained from RAPTS-T-9 pibals observation at T-0 mins as follows:

#### SITE & ALT.

LC-33 900 meters (15 meter incs)

APA 900 meters (30 meter incs)

SMR 900 meters (30 meter incs)

(2) Air structure data (rawinsonde) were collected at the SMR Met Site at T-0 mins. Data were collected from surface to 125% of apogee in 100 meter incs.



The data are presented in the following tabulations:

ELEVATION	3977.30	FEET/MSL
PRESSURE	873.5	MBS
TEMPERATURE	18.9	°C
RELATIVE HUMIDITY	27	%
DEW POINT	-0.5	°C
DENSITY	1038	GM/M <sup>3</sup>
WIND SPEED	08	MPH
WIND DIRECTION	140	DEGREES
CLOUD COVER	1	Cs

TABLE I. SURFACE OBSERVATIONS TAKEN AT WSD  
AT 1545 HRS MST/1 DECEMBER 1978  
19303 GSRS, MISSILE NUMBER 1013, ROUND NUMBER V-13

T-TIME (SEC)	SPEED (MPH)	DIR DEG
-60.0	---	---
-50.0	---	---
-40.0	---	---
-30.0	5.0	180
-20.0	6.0	190
-10.0	12.0	215
-00.0	15.0	205
+10.0	13.0	190
+20.0	12.0	200
+30.0	17.0	200

TABLE II. ANEMOMETER-MEASURED WIND SPEED AND DIRECTION, POLE NO. 1  
RELEASED FROM LC-33 AT 1545 HRS MST/1 DECEMBER 1978  
19303 GSRS/ROUND NUMBER V-13

WSTM COORDINATES: X = 485,874.29 Y = 185,958.90 Z = 4,018.74

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

T-TIME (SEC)	SPEED (MPH)	DIR DEG
-60.0	---	---
-50.0	---	---
-40.0	---	---
-30.0	6.0	205
-20.0	9.0	200
-10.0	10.0	210
-00.0	15.0	210
+10.0	13.0	195
+20.0	13.0	210
+30.0	17.0	190

TABLE III. ANEMOMETER-MEASURED WIND SPEED AND DIRECTION, POLE NO. 2  
RELEASED FROM LC-33 AT 1545 HRS MST/1 DECEMBER 1978  
19303 GSRS/ROUND NUMBER V-13

WSTM DOORDINATES: X = 485,874.93 Y = 186,012.00 Z = 4,033.57

NOTE: WIND DIRECTION ARE REFERENCED TRUE NORTH.

T-TIME (SEC)	SPEED (MPH)	DIR DEG
-60.0	---	---
-50.0	---	---
-40.0	---	---
-30.0	7.0	195
-20.0	12.0	210
-10.0	12.0	180
-00.0	18.0	210
+10.0	14.0	205
+20.0	13.0	195
+30.0	17.0	190

TABLE IV. ANEMOMETER-MEASURED WIND SPEED AND DIRECTION, POLE NO. 3  
RELEASED FROM LC-33 AT 1545 HRS MST/1 DECEMBER 1978  
19303 GSRS/ROUND NUMBER V-13

WSTM COORDINATES: X = 485,877.29 Y = 186,116.06 Z = 4063.92

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.



HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
SUR	210	4.0
50	207	4.3
100	206	4.7
150	205	5.0
200	204	5.4
250	203	5.7
300	202	6.1
350	201	6.5
400	200	6.8
450	199	7.2
500	196	7.6
550	194	8.1
600	192	8.6
650	190	9.1
700	188	9.6
750	186	10.1
800	185	10.8
850	184	10.9
900	183	11.2
950	182	11.5
1000	181	11.8

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
1050	180	12.1
1100	180	12.4
1150	179	12.6
1200	180	12.5
1250	181	12.4
1300	181	12.3
1350	182	12.2
1400	183	12.1
1450	183	12
1500	185	11.9
1550	187	11.8
1600	190	11.8
1650	193	11.7
1700	196	11.7
1750	199	11.8
1800	202	11.8
1850	205	12.1
1900	211	12.9
1950	216	13.7
2000	220	14.7
2050	224	15.7

TABLE V. PILOT-BALLOON-MEASURED WIND DATA RELEASED FROM APA.  
AT 1545 HRS MST/1 DECEMBER 1978  
19303 GSRS, MISSILE NUMBER 1013, ROUND NUMBER V-13

PIBAL RELEASE POINT WSTM COORDINATES:

X = UNKNOWN

Y = UNKNOWN

Z = UNKNOWN

APPROXIMATELY: 9 MILES NORTH OF LAUNCHER

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.



HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
SUR	140	8.0
50	148	7.0
100	155	7.0
150	162	6.0
200	170	5.5
250	182	6.0
300	194	6.0
350	206	6.0
400	218	6.5
450	212	9.0
500	206	13.5
550	200	17.0
600	194	20.5
650	194	21.5
700	194	22.5
750	194	23.0
800	194	24.0
850	195	24.0
900	196	24.5
950	197	24.5
1000	198	24.5

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
1050	196	24.5
1100	195	24.5
1150	193	24.5
1200	191	24.5
1250	191	25.0
1300	192	25.0
1350	192	25.0
1400	192	25.0
1450	193	24.5
1500	195	24.5
1550	196	24.0
1600	197	23.5
1650	197	22.0
1700	198	20.0
1750	198	18.0
1800	198	16.5
1850	199	16.0
1900	201	15.0
1950	202	14.5
2000	204	13.5
2050	201	13.0

TABLE VI. PILOT-BALLOON-MEASURED WIND DATA RELEASED FROM LC-33  
AT 1545 HRS MST/1 DECEMBER 1978  
19303 GSRS, MISSILE NUMBER 1013, ROUND NUMBER V-13

PIBAL RELEASE POINT WSTM COORDINATES:

X = 486,037.24

Y = 182,350.16

Z = 3977.30

APPROXIMATELY: 1/2 MILE SOUTH OF LAUNCHER

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.







STATION ALTITUDE 3989.00 FEET MSL  
1 DEC. 78 1545 HRS MST  
ASCENSION NO. 769

SIGNIFICANT LEVEL DATA  
3350020769  
WHITE SANDS  
TABLE VII.

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE		REL. HUM. PERCENT
		AIR	DEWPOINT	
870.3	3989.0	18.3	-1.0	27.0
850.0	4651.1	17.2	.4	32.0
830.2	5310.1	16.2	-.5	32.0
770.2	7379.1	9.5	-4.8	36.0
750.8	8071.3	7.1	-7.3	35.0
738.2	8530.1	9.3	-13.1	19.0
731.6	8775.4	11.2	-9.1	23.0
700.0	9979.4	8.4	-11.0	24.0
606.6	13804.4	-.4	-18.0	25.0
542.0	16725.0	-7.6	-22.1	30.0
511.2	18211.0	-11.6	-24.6	33.0
502.1	18662.7	-12.8	-22.2	45.0
500.0	18767.9	-12.8	-24.1	38.0
487.5	19402.1	-13.8	-21.7	51.0
481.6	19706.9	-13.1	-27.7	28.0
453.6	21200.2	-15.8	-34.6	18.0
400.0	24279.2	-22.4	-40.1	18.0

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STATION ALTITUDE 3989.00 FEET MSL  
1 DEC. 78 1545 HRS MST  
ASCENSION NO. 769

UPPER AIR DATA  
3350020769  
WHITE SANDS  
TABLE VIII.

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
3989.0	870.3	18.3	27.0	1037.7	665.9	180.0	8.0	1.000257
4000.0	870.0	18.3	27.1	1037.3	665.9	180.3	7.9	1.000257
4500.0	854.6	17.5	30.9	1021.7	665.0	193.1	7.1	1.000255
5000.0	839.5	16.7	32.0	1006.3	664.1	208.2	6.8	1.000252
5500.0	824.5	15.6	32.4	992.2	662.9	223.6	6.9	1.000247
6000.0	809.7	14.0	33.3	980.0	660.9	237.8	7.5	1.000243
6500.0	795.1	12.3	34.3	966.0	659.0	249.2	8.5	1.000239
7000.0	780.9	10.7	35.3	956.1	657.1	259.9	13.0	1.000234
7500.0	766.8	9.1	35.8	944.5	655.1	265.1	19.2	1.000230
8000.0	752.8	7.3	35.1	933.2	653.1	266.8	29.5	1.000225
8500.0	739.0	9.2	20.1	910.9	655.0	268.0	39.7	1.000214
9000.0	725.6	10.7	23.2	889.2	656.8	271.2	40.7	1.000212
9500.0	712.4	9.5	23.6	876.7	655.5	273.3	34.7	1.000209
10000.0	699.5	8.4	24.0	864.4	654.1	273.2	31.7	1.000205
10500.0	686.5	7.2	24.1	851.9	652.7	271.2	33.7	1.000202
11000.0	673.8	6.1	24.3	839.6	651.4	268.8	38.8	1.000198
11500.0	661.3	4.9	24.4	827.5	650.0	266.8	43.5	1.000195
12000.0	649.0	3.8	24.5	815.6	648.6	265.0	47.4	1.000191
12500.0	637.0	2.6	24.7	803.8	647.3	263.4	51.2	1.000188
13000.0	625.1	1.5	24.8	792.3	645.9	262.2	54.5	1.000185
13500.0	613.6	.3	24.9	780.9	644.5	261.7	53.1	1.000182
14000.0	602.0	-.9	25.3	769.6	643.1	261.2	51.7	1.000179
14500.0	590.5	-2.1	26.2	758.4	641.6	260.7	50.4	1.000176
15000.0	579.3	-3.3	27.0	747.3	640.2	262.0	51.4	1.000173
15500.0	568.2	-4.6	27.9	736.4	638.7	263.3	52.4	1.000170
16000.0	557.4	-5.8	28.8	725.7	637.2	264.9	53.0	1.000168
16500.0	546.7	-7.0	29.6	715.2	635.7	267.3	52.6	1.000165
17000.0	536.2	-8.3	30.6	704.8	634.2	269.9	52.3	1.000162
17500.0	525.7	-9.7	31.6	694.7	632.6	271.5	54.1	1.000160
18000.0	515.5	-11.0	32.6	684.6	630.9	271.6	55.1	1.000157

STATION ALTITUDE 3989.00 FEET MSL 1 DEC. 78 ASCENSION NO. 769				UPPER AIR DATA 3350020769 WHITE SANDS				GEODETIC COORDINATES 32.40043 LAT DEG 106.37033 LON DEG			
GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION			
18500.0	505.4	-12.4	40.7	674.6	629.3	270.5	53.8	1.000156			
19000.0	495.4	-13.2	42.8	663.3	628.4	270.3	48.3	1.000153			
19500.0	485.6	-13.6	43.6	651.2	627.9	269.8	46.1	1.000150			
20000.0	476.0	-13.6	26.0	638.6	627.7	269.0	45.2	1.000145			
20500.0	466.5	-14.5	22.7	628.2	626.6	268.0	45.3	1.000142			
21000.0	457.3	-15.4	19.3	617.9	625.5	267.4	45.8	1.000140			
21500.0	448.1	-16.4	18.0	607.9	624.3	266.8	46.4	1.000137			
22000.0	439.0	-17.5	18.0	598.1	623.0	266.4	47.1	1.000135			
22500.0	430.1	-18.6	18.0	588.5	621.6	266.2	47.9	1.000133			
23000.0	421.5	-19.7	18.0	579.1	620.3			1.000130			
23500.0	412.9	-20.7	18.0	569.8	619.0			1.000128			
24000.0	404.6	-21.8	18.0	560.7	617.7			1.000126			



STATION ALTITUDE 3989.00 FEET MSL  
 1 DEC. 78  
 ASCENSION NO. 769

MANDATORY LEVELS  
 3350020769  
 WHITE SANDS  
 TABLE IX.

GEODETIC COORDINATES  
 32.40043 LAT DEG  
 106.37033 LON DEG

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM.	WIND DATA	
MILLIBARS	FEET	AIR DEGREES	DEWPOINT CENTIGRADE	PERCENT	DIRECTION DEGREES(TN)	SPEED KNOTS
850.0	4648.	17.2	.4	32.	197.4	7.0
800.0	6333.	12.9	-2.6	34.	245.8	8.1
750.0	8093.	7.2	-7.6	34.	266.9	31.9
700.0	9970.	8.4	-11.0	24.	273.2	31.9
650.0	11961.	3.8	-14.6	25.	265.1	47.1
600.0	14075.	-1.1	-18.4	25.	261.2	51.5
550.0	16328.	-6.7	-21.5	29.	266.6	52.8
500.0	18742.	-12.8	-24.1	38.	270.4	50.9
450.0	21365.	-16.2	-34.9	18.	266.9	46.3
400.0	24239.	-22.4	-40.1	18.		

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STATION ALTITUDE 3989:00 FEET MSL  
 1 DEC. 78  
 ASCENSION NO. 769

MRN MANDATORY LEVELS  
 3350020769  
 WHITE SANDS  
 TABLE X.

GEODETIC COORDINATES  
 32.40043 LAT DEG  
 106.37033 LON DEG

GEOPOTENTIAL ALTITUDE DECAMETERS	DIRECTION DEG (TN)	WIND DATA		E-W MPS	DEW PT DEP DEG C	TEMPERATURE		PRESSURE MILLIBARS
		SPEED MPS	N-S MPS			AIR DEG C		
739.	9999.**	9999.**	-9999.**	-9999.**	18	-22.4	4.000+2	
651.	267.	24.	1.	24.	19	-16.2	4.500+2	
571.	270.	26.	-0.	26.	11	-12.8	5.000+2	
498.	267.	27.	2.	27.	15	-6.7	5.500+2	
429.	261.	26.	4.	26.	17	-1.1	6.000+2	
365.	265.	24.	2.	24.	18	3.8	6.500+2	
304.	273.	16.	-1.	16.	19	8.4	7.000+2	
247.	267.	16.	1.	16.	15	7.2	7.500+2	
193.	246.	4.	2.	4.	15	12.9	8.000+2	
142.	197.	4.	3.	1.	17	17.2	8.500+2	

4 \*\* WIND DATA NOT COMPUTED DUE TO MISSING RAW AZIMUTH AND ELEVATION ANGLES.

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